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ABSTRACT

The intent of Women Inquire Into Science and Engineering (WISE) project was to develop recruiting and counseling procedures to increase the number of female high school students' interest and participation in the Inquiry Into Science and Engineering Class where classroom instruction and hands-on experience working with scientists and engineers are provided. Methods to systematically draw women into science professions were implemented. Factors affecting female representation in scientific and engineering professions as well as in the WISE class were identified. This knowledge was used to develop three programs to enhance student career interests: (1) the mentor program; (2) an audio-visual program; and (3) a role model program. (Author/DS)

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WOMEN INQUIRE INTO SCIENCE AND ENGINEERING

(WISE)

SCIENCE/ENGINEERING EXPERIENCE

HIGH SCHOOL MODEL PROGRAM

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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WOMEN INQUIRE INTO SCIENCE AND ENGINEERING (WISE)

SCIENCE/ENGINEERING EXPERIENCE

HIGH SCHOOL MODEL PROGRAM

Richland School District No. 400
615 Snow Avenue
Richland, Washington 99352

DeWayne Boyd, Project Director
Jacqueline Cushing, Project Coordinator

September 1, 1977 - August 31, 1978

This project was a separate part of a larger program,

INQUIRING INTO SCIENCE AND ENGINEERING

Columbia High School
Richland School District No. 400

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Joseph A. Califano, Jr., Secretary

Mary F. Berry, Assistant Secretary for Education

Office of Education

Ernest L. Boyer, Commissioner

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ABSTRACT

The intent of the project was to develop recruiting and counseling procedures to increase the number of female high school students' interest/participation in the Inquiry Into Science and Engineering Class where classroom instruction and valuable hands-on experience working with scientists and engineers are provided. Methods to systematically draw women into science professions were implemented.

Some limiting factors affecting female representation in scientific and engineering professions and in the Inquiry Into Science and Engineering Class were identified. Student information indicated the critical grade levels for general and personal career awareness and preparation information. This knowledge was utilized in the development of three programs:

1. The Mentor Program. This is a one-to-one relationship between a student and a professional working in the student's field of career interest. It is a simple but very effective means of tapping the wealth of science talent hidden in every community and sharing it in a personalized way with interested students. The program has been enthusiastically received by students, mentors, parents, and school personnel. It has potential for expansion into neighboring cities and also, into vocational fields other than scientific. Students in grades nine through twelve participated.

2. Audio-Visual Program. "Women Inquire Into Science and Engineering (WISE)" is a twenty-two minute slide-cassette tape presentation for grades six through twelve. It includes a guideline, script, and scientific vocabulary. The information is directed to young women, but is applicable to young men. Five-minute talks by four women are illustrated with slides. In the first segment, the importance of math, science, drafting, and shop courses is emphasized. Girls are shown at work in the Science Inquiry Class and at their on-the-job experiences. A physicist who gives a self-profile and describes the personal attributes of a scientist, comprises the second segment. The third is an interview with a chemical engineer, and the final speaker is a physician. Both describe personal motivation, training required, difficulties and rewards, and give excellent advice to high school students who are thinking about a future in science.

3. Role-Model Program. This is a plan for bringing role models into classrooms, assemblies, and evening career awareness programs to which parents and students are invited.

The Adopter's Manual includes a Resource List of Literature dealing with related topics.

In recognition of the imbalanced sex-ratio in the Inquiry Into Science and Engineering Class, efforts were made to inform young women of opportunities for them in science and engineering careers and to apprise them of the prerequisites. The short-range goal of increased female enrollment was met as seen through pre-registration enrollment. The long-range goal of systematically drawing women into science professions gives positive indications but only future enrollments in math and science courses will testify to their effectiveness. Since this project is designed to encourage young women to academically prepare for science careers, it is adaptable to any community in the United States whether or not the work-learn Inquiry Into Science and Engineering Model Program is adopted.

ABSTRACT ADDENDUM

This project supplemented the on-going Inquiry Into Science and Engineering Model Program at Columbia High School, Richland, Washington. The Science Inquiry Class places senior high school students in science and engineering work-learn positions. The students acquire accurate knowledge about the actual duties and training requirements for technical/professional science/engineering careers. They also become competent in a number of science/engineering technical skills. They are paid the minimum wage while receiving credit at school in this two-phase program. The first phase takes place during a one hour daily on-campus, integrated science class. The second phase is the on-site training component of the program. The student is interviewed by the prospective employer and provided with an opportunity to work, approximately twenty hours per week, under the guidance of a professional scientist or engineer. Students are pre- and post-tested. Evaluation is done by a disinterested professional person. A more detailed account of the functioning of this program will be found in the Adopter's Manual to "Inquiry Into Science and Engineering" project (INSE).

The Women Inquire Into Science and Engineering (WISE) project requires no special equipment. It is adaptable to expansion in which case a part-time coordinator should be employed, or it can be minimized to the extent that individual teachers and counselors can work with it at their own pace. Minimizing it, of course, will diminish returns but will still have a positive effect.

An Adopter's Manual has been prepared. The audio-visual product, "WISE" consists of a cassette tape and 35mm color slides, sequenced in carousel trays with presentation guideline, script and scientific vocabulary. This set may be borrowed from the Richland School District for the cost of packaging and mailing. Requests should be made to:

DeWayne Boyd, Assistant Superintendent
Richland School District No. 400
615 Snow Avenue - Attn: Instructional Resource Center
Richland, Washington 99352

ACKNOWLEDGEMENTS

The Project Director and Coordinator wish to thank everyone who participated in the completion of this project. Since hundreds of adults gave freely of their time, it is impossible to acknowledge each one individually.

Sincere appreciation is extended to the members of the following organizations:

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Tri-City Herald News Service
Teleprompter Cable TV
Tri-City Technical Council
United Nuclear Industries
University of Washington
Westinghouse - Hanford
Womens Program Staff, WEEAP

and to the many individuals not formally associated with the organizations listed above.

PREFACE

A WORD TO THE WISE ADOPTER . . . . .

Much of the rationale behind the Bakke decision in the Supreme Court Case of Regents at the University of California vs Allan Bakke, is applicable here.

Justice Lewis Powell says "Preferential programs may only reinforce common stereotypes, holding that certain groups are unable to achieve success without special protection . . . There is also a measure of inequity in forcing innocent persons in a position to bear the burdens of redressing grievances not of their making . . ."

In a coeducational system, attention directed exclusively to the feamle segment, creates resentment, often among both sexes. This is more serious than just a tag of "another woman libber's program." It perpetuates the problems of sex-role stereotyping and male resentment. In our public school system, females and males expect equal treatment. Young women are humiliated at preferential treatment. A program which, based only on sex, singles out females for assistance which is badly needed and equally desired by their male peers, alienates the males and eventually will be disasterous for the program. At best, young men would think that this is a program for women and of no concern to them. Such an attitude would be a mistake. Support of male peers is important.

A young woman pursuing studies in science and mathematics, and a subsequent related career, holds minority status. She needs the cooperation of her male counterpart. Men are intricately involved in these occupations. An appreciation of the problems which beset women working in such fields needs to be promoted among young males, a development of conscience. High school students recognize and respect honesty in a speaker. When a speaker, in introductory remarks, explains why the emphasis is on the female population and that much of the information is applicable to males, few will be offended.

Before scheduling a program, it would be well to have a brief speakers' orientation. However talented and experienced speakers may be, they may not communicate well with high school students. Very often, students do not ask questions after a program. This belies their interest. Speakers should come prepared with a list of related topics to discuss after the presentation, such as type of grades required, salary range, and the like. Vocabulary may need to be explained. Editorializing should be avoided. Their opinions may not be shared by members of the audience and unnecessary barriers are created. The encouragement of young women to become aware of the opportunities for them in science and engineering can be better served by a positive approach rather than by a rehashing of abuses in the school of 'hard knocks' to which today's student does not relate.

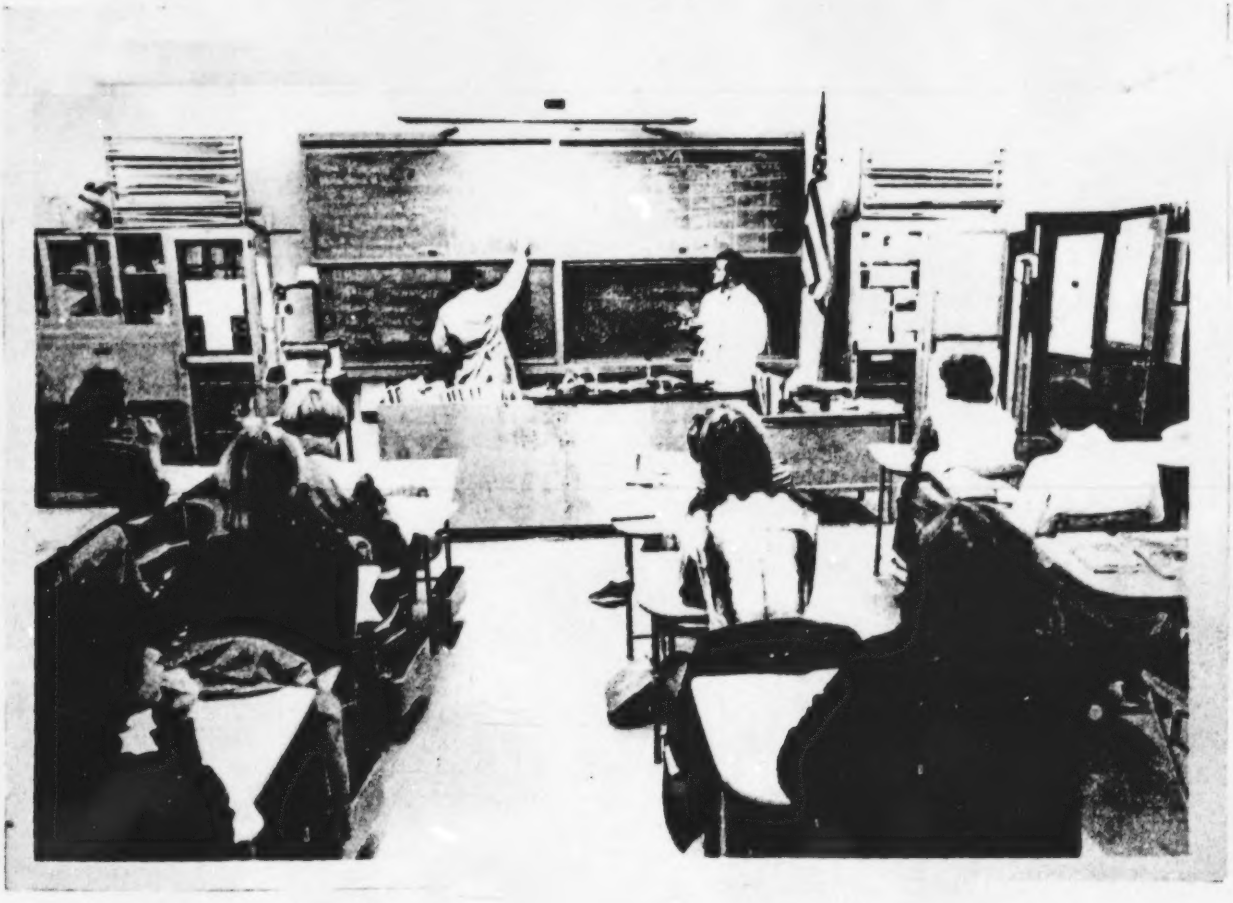


Figure 1. Students in the Inquiry Into Science and Engineering Class listen as teacher Jim Harbour stresses safety. Teacher Ed Fankhauser, watches.

ADOPTER'S MANUAL

WOMEN INQUIRE INTO SCIENCE AND ENGINEERING (WISE)

DeWayne Boyd, Project Director
Jacqueline Cushing, Project Coordinator

PART 1

LIMITING FACTORS AFFECTING FEMALE REPRESENTATION IN SCIENTIFIC AND ENGINEERING PROFESSIONS AND IN THE INQUIRY INTO SCIENCE AND ENGINEERING CLASS.

COMMUNITY BACKGROUND

Richland, Washington is a comparatively new city of approximately 30,000 people located near the confluence of the Columbia and Snake Rivers in southeastern Washington State. Until 1943, it was a remote farming village with a resident population of approximately 800 people. During that year, however, the Hanford Atomic Energy Project was begun, and Richland was transformed into a thriving scientific-industrial center with a diverse population.

In the interim since 1943, a massive diversification project has made the community one of the nation's major research centers. Companies like Battelle Northwest Laboratories, Hanford Engineering Development Laboratories, and Westinghouse-Hanford Company, regularly make contributions toward the solutions of the world's most pressing energy, food production, and population growth problems.

As a city highly involved in scientific enterprise, Richland has a population that ranks the highest in the State of Washington in educational attainment.

There are two public high schools, three junior high schools, seven elementary schools with two more presently under construction, and a parochial school with grades one through eight. Given good schools and a community which supports education, the fact remains that female enrollment in college preparatory mathematics and science courses is significantly less than that of males.

HIGH SCHOOL ENROLLMENT

Data was collected pertaining to the enrollment of male and female students in mathematics, science courses, and industrial arts through school enrollment records for September 1977 and through pre-registration enrollment records for September 1978 in Columbia High School. (Figs. 2, 3,4).

In September 1977, the total student population had a female-male ratio of 1.0 to 1.0. In science, with the exception of biology and advanced biology, the female-male ratio was 1.0 to 1.8. In biology, it was about 1.0 to 1.0. In higher mathematics, it was 1.0 to 1.6. In Industrial Arts, drafting has a 1.0 to 4.0; and shop had a 1.0 to 6.1 with 95% of female enrollment being in crafts or jewelry making. Auto service, power mechanics, welding, and machine shop had no female students enrolled.

Consequently, fewer female than male students had the prerequisite courses for taking the Inquiry Into Science and Engineering Class, where female-male ratio was 1 to 1.6. Enrollment in higher mathematics and science courses is a limiting factor.

From pre-registration enrollment data for September 1978, the total student population female-male ratio is project at 1.0 to 1.1, a majority of forty-three male students. The percentages of female enrollment in college preparatory mathematics courses have increased in Algebra 1-2, Algebra 3-4, Geometry, and Calculus (Fig. 2). Percentages decreased in Trigonometry and Algebra 3-4 for seniors, classes which are taken primarily by seniors. There are too many variables involved to permit an identification of causative factors. Possible ones may be that eleventh grade students were not exposed soon enough to career awareness programs, or that, as each class seems to have its own personality, the class of 1979 may be less academically inclined than others. In the Sciences (Fig. 3), female enrollment in Chemistry has increased by ten percent and in Biology, it remained the same. Advanced Biology and Physics classes which are primarily elected by seniors, show decreases. Total student enrollment decreased in these classes. In the senior Inquiry Into Science and Engineering Class, female enrollment increased by two. If the class enrollment is limited to 28, this would be a 4.4% increase, or a female-male ratio of 1.0 to 1.3. In Industrial Arts (Fig. 4), female enrollment increased in Power Mechanics and Electronics.

This imbalanced sex-ratio in science and mathematic courses is not unique to Columbia High School. Results of a study made at the University of Washington[1] show that Asian Americans, Blacks, Hispanics, and Caucasians female students, in addition to non-Asian males, take less college preparatory mathematics in high school than do Caucasian males. (Figs. 5,6). "The participation rates by females and minorities in traditional high school science courses match their participation in high school mathematics courses and college study and employment in the fields of life sciences, chemistry and physics."[1] National attention is being given to this problem. For some references, please see the Resource List, page .

ADULT QUESTIONNAIRE RESPONSES

Sixty-nine women employed in scientific or engineering occupations responded to a profile questionnaire composed by the Project Coordinator and circulated by women in the Equal Employment Opportunities Office of Battelle Northwest, the Society of Women Engineers, and Kadlec Hospital's Public Relations Office. Fields represented by the respondents were:

[1] Remick, H., K. Miller. May 1978. Participation rates in high school mathematics and science courses. The Physics Teacher, p. 280.282.

engineering (21), i.e., civil, aeronautical, chemical, mechanical, nuclear, construction, electrical,and metallurgical; chemistry (15); biology (11); physics (5); computers (5); mathematics (2); medicine (3); pharmacy (2); geology (1); economics (2); medical technician (1); technical journalism (1).

The limiting factors identified were parental support, teachers, advisors, career awareness, role models, peer acceptance, strong mathematics and science background, familiarity with tools, communicative skills, self-confidence, and assertiveness.

The most influential factors in career choices were: parents, listed by 35% as the most influential and by 62% as first, second or third in order of influence - teachers; role models; relatives; friends; job-market; and books. Some reported they were self-motivated. A few reported proceeding in spite of negative parental influence.

The limiting factor of early career awareness is shown by the fact that 78% of the respondents became interested in a scientific career before they finished high school, 57% indicated they became vaguely, definitely or specifically interested while in junior high school, and 35% indicated they were vaguely or definitely interested while in elementary school.

Obstacles freqently listed were lack of self-confidence and lack of aggressiveness or assertiveness.

The general advice given to high school girls was to take all the mathematics and science courses they can, to learn to handle tools, either at home or in shop classes, to learn communicative skills, both verbal and written, not to be easily discouraged, and to find an advisor to guide them. The importance of role models was stressed.

ELEMENTARY STUDENT QUESTIONNAIRE RESPONSES

Among third and sixth grade students, no difference was found in attitude toward mathematics (Table 1). Eighty-five percent of girls reported they like it. If one can relate liking a subject, studying to achievement follows. This data agrees with the statement, "differences between men and women in their study of mathematics persist despite the fact that current research indicates that there are no significant differences in their achievement in mathematics before the seventh or eighth grades."[2]

A total of 734 elementary third and sixth grade pupils wrote what they would like to be when they are adults. No list of choices was supplied, yet the same four careers totaling 50% of choices were listed by third, sixth and even by seventh grade girls (Tables 1,2,4). They were teacher, nurse, veterinarian, and 'don't know' in third grades; 'don't know', veterinarian, teacher, and nurse in sixth grade. Boys listed athlete, engineer, and 'don't know' in third grade; 'don't know', athlete, engineer, and policeman in sixth grade (Tables 1,2).

[2] Fox, L. H., E. Fennema, and J. Sherman. 1977. Women and Mathematics; Research Perspectives for Change. NIE Papers in Education and Work, No. 8, U.S. Dept. HEW, p. 1.

One sixth grade class was asked the same career question six months later, and 50% of the class listed choices different from their earlier ones. Sixth grade students are indeed at the "don't know" stage. They are good candidates for a career awareness program. Toward the end of sixth grade term, they enroll in junior high schools where they experience class options, usually for the first time. These could be critical choices.

JUNIOR HIGH SCHOOL STUDENT QUESTIONNAIRE RESPONSES

With both boys and girls, the "don't know" response to career aspirations, increased from grades 3,6,7 and 8. In grade 9, the "don't know" answer decreased, although it is still approximately 25%. Career choices change as goals become more realistic, as girls learn that a veterinarian requires more than loving pets, and boys learn that a professional athlete requires more than enjoying athletics. With eighth grade students, uncertainty was prevalent as childhood fantasies were metamorphosing into realistic goals. Sometimes they looked at stereotyped opportunities as is evidenced by the 10.8% fewer ninth grade girls than boys intending to take more classes in both math and science. (Table 6). Students who take both math and science include the potential scientists, engineers, physicians, veterinarians, dentists, and the like. Although the table lists 7.4% more girls than boys planning to take math without science, high school enrollment data show that most girls take non-academic type math (Fig. 2). Many who do take academic math are meeting the two year college entrance requirement and have no plans for science or engineering careers. The 5.8% difference in favor or girls planning enrollment in science without math, probably means that they have not yet met high school graduation requirements for science. Although enrollment in ninth grade science and math courses for the sexes may be equal, the problem has already begun as shown by their plans for future courses.

DISCUSSION

"How to change females' election of mathematics courses is unknown. In fact, changing any behavior in a systematic way appears to be an elusive, if not impossible occurrence. It has been simplistically assumed that the first step in changing behavior is to identify the causative factors of that behavior. . .Not all factors related to performance can be modified . . .Even when modification in an identified factor is possible, the factors exist in such a complex network of intersecting factors that modification of one is ineffective in producing long-range behavioral change. Some related factors, while perhaps amenable to change, either cannot be changed by schools or the schools' possible impact is limited."[3]

3
Fennema, Elizabeth. 1977. Influences of Selected Cognitive, Affective and Educational Variables on Sex-related Differences in Mathematics Learning and Studying. Women and Mathematics;Research Perspectives For Change. NIE Papers in Education and Work, No. 8, U.S. Dept. HEW, pp. 79-135.

WISE began with an identification of limiting factors by adult female role models. Each of these factors is addressed in this program, but each is indeed intertwined in a network of other modification factors. They are, in fact, intertwined with each other. For example, self-confidence, assertiveness, math avoidance, and mathephobia appear to be related to self-reliance, aggressiveness, and communicative skills. These can be influenced by all concerned, but primarily, by parents.

From the student data collected (Tables 1 to 7), it is evident that sex-role stereotyping with its associated academic-type math avoidance by females exists even in this largely scientifically employed community.

Grade six with 50% turnover in career choice in six months to grade eight, with an ever-increasing state of uncertainty, lends itself to agreement with Fennema's tentative conclusion that "grades 6-8 seem to be critical in the development of attitudes." In grade six, our data showed no difference in male and female attitude toward math, but by grade nine, 10.8% more males than females were planning to take more math and science.

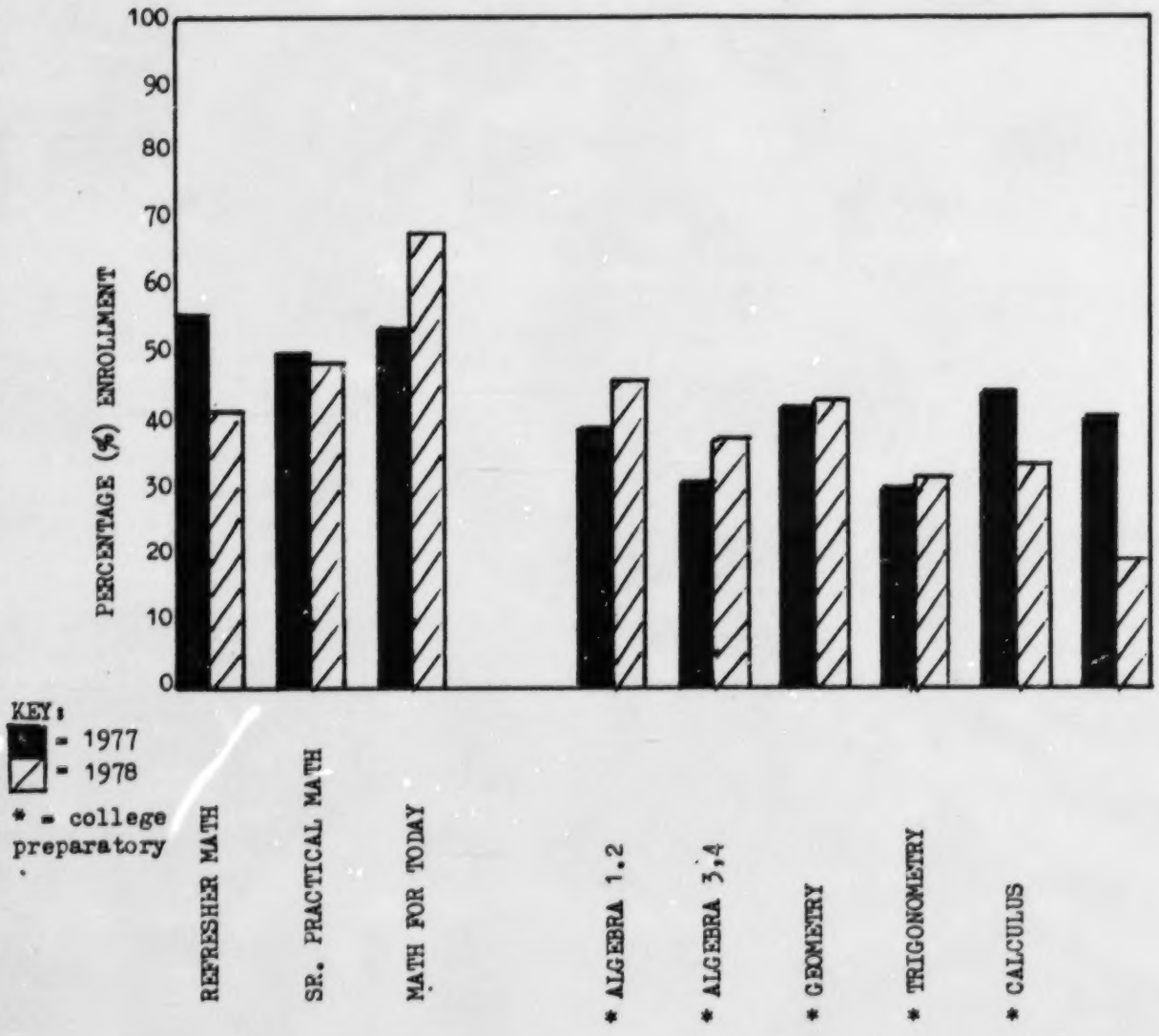


Figure 2. Percentages of females in class enrollments in mathematics for Sept. 1977, and projected for Sept. 1978 in Columbia High School.

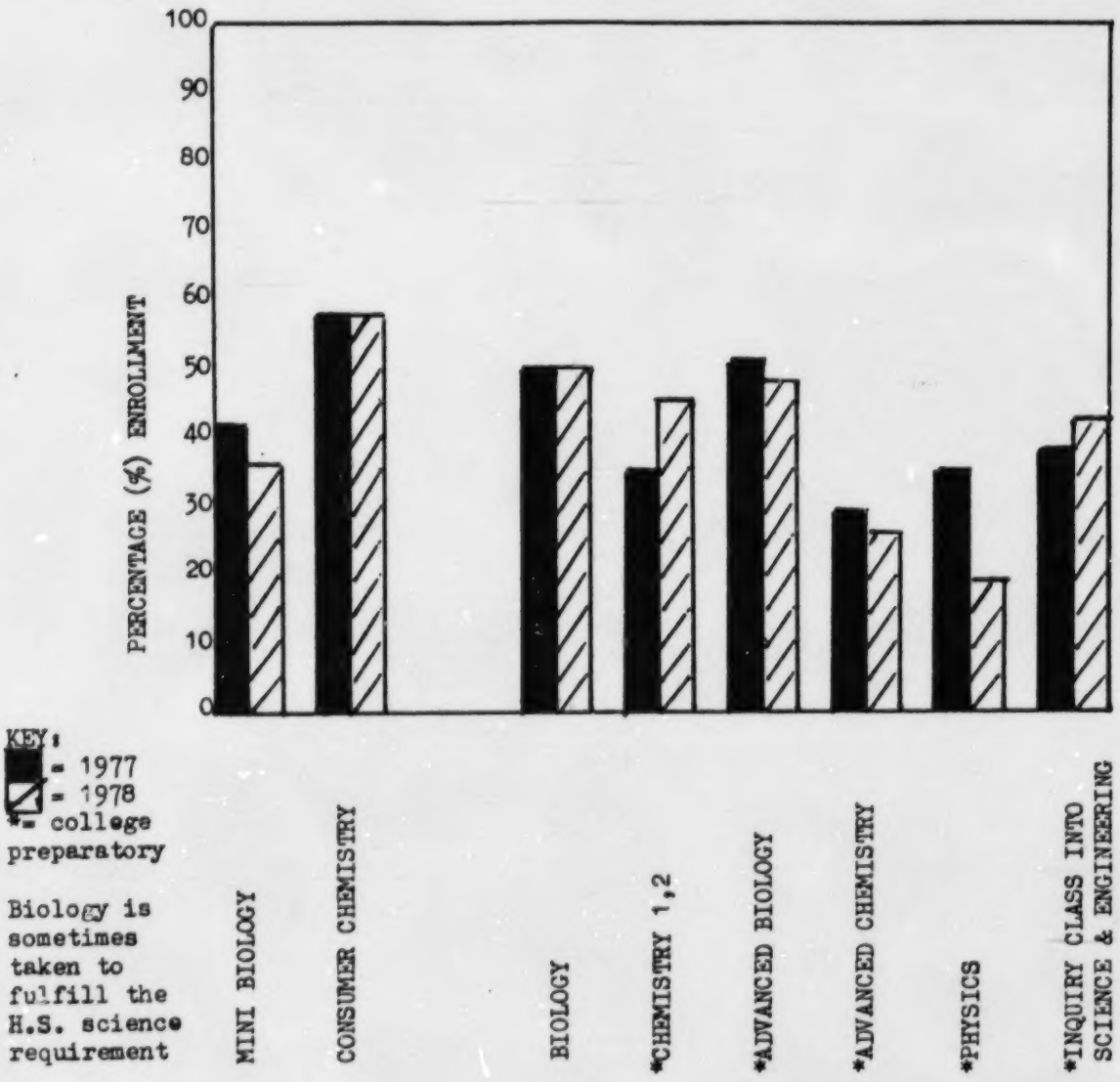


Figure 3. Percentages of females in class enrollments in science for Sept. 1977, and projected for Sept. 1978 in Columbia High School.

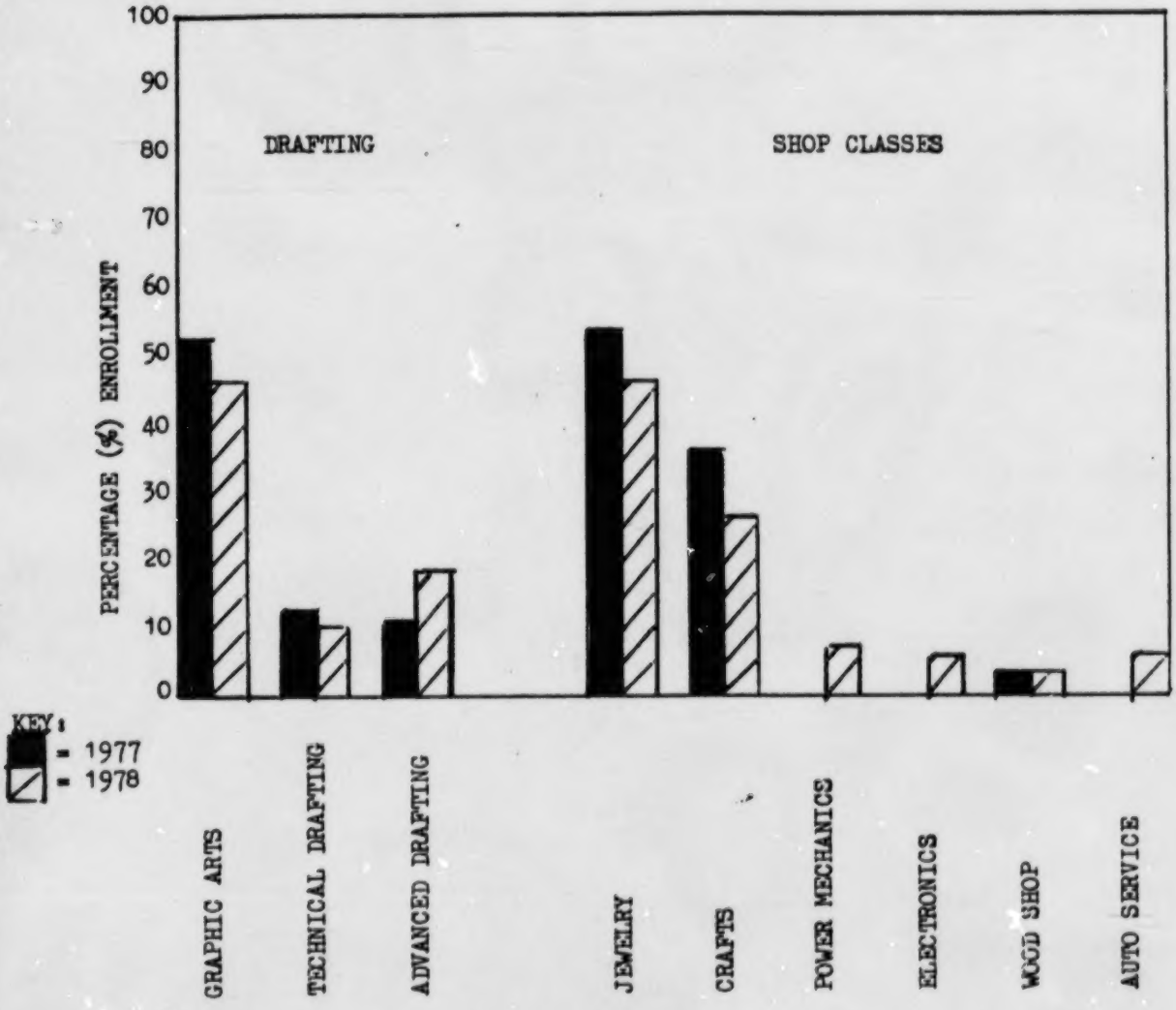


Figure 4. Percentages of females in class enrollments in industrial arts for Sept. 1977, and projected for Sept. 1978 in Columbia High School.

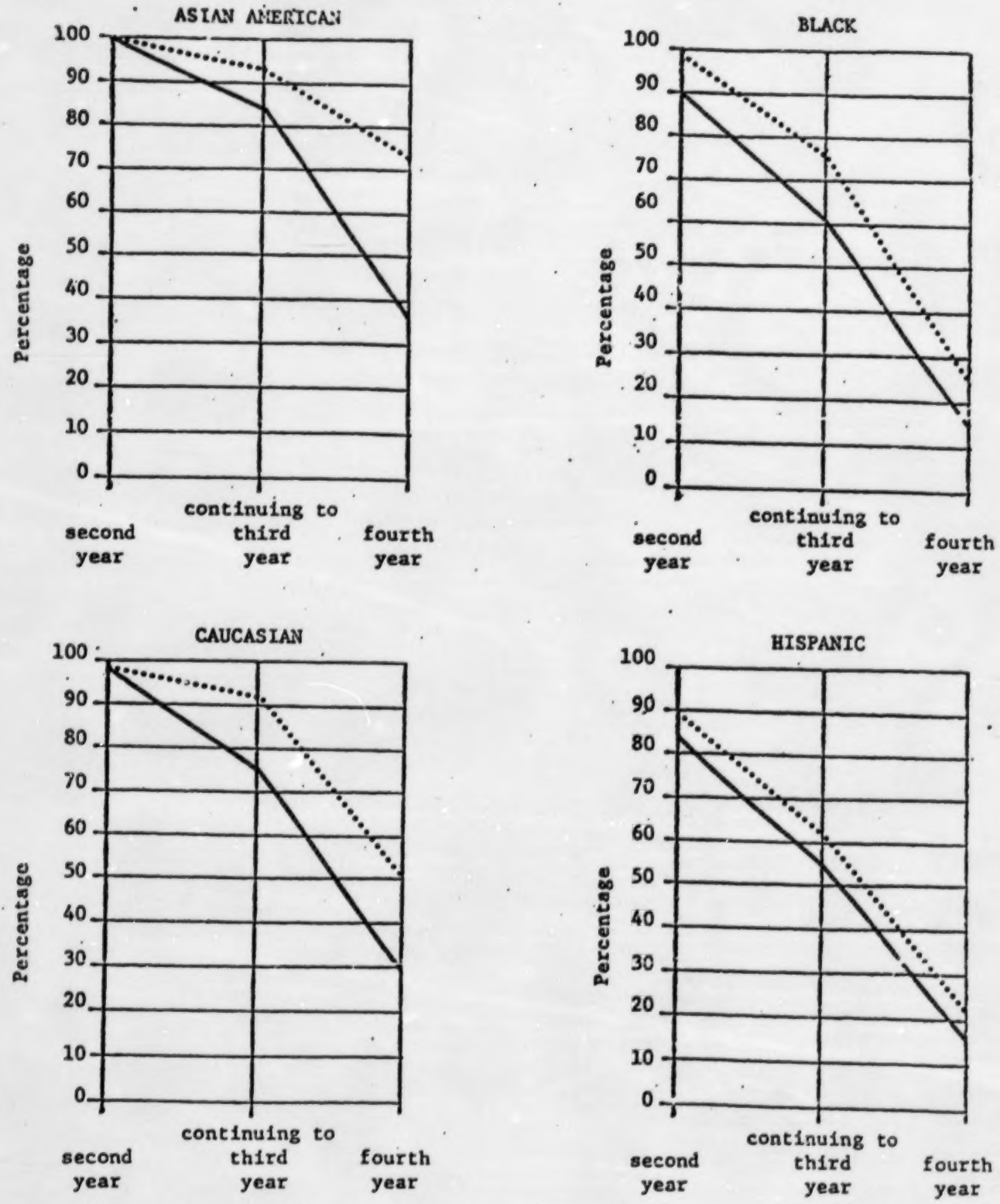
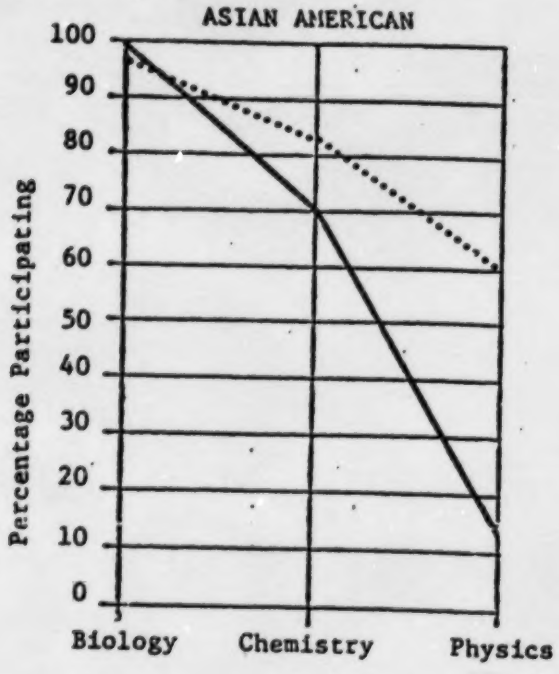
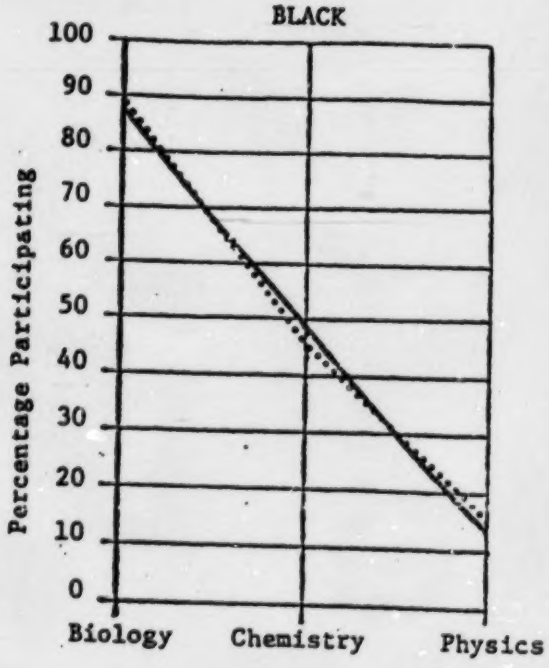
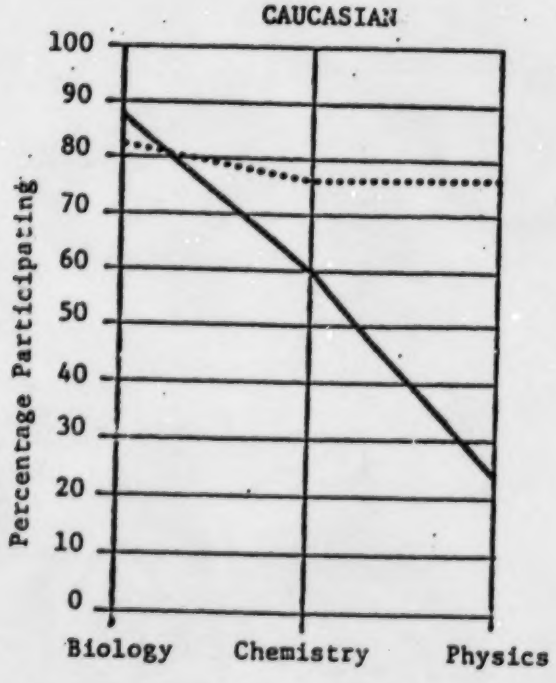


Figure 5. Percentages of students continuing to next level of college preparatory mathematics.[1]

1. Remick, H., K. Miller. May, 1978. Participation rates in high school mathematics and science courses. The Physics Teacher. p. 281.







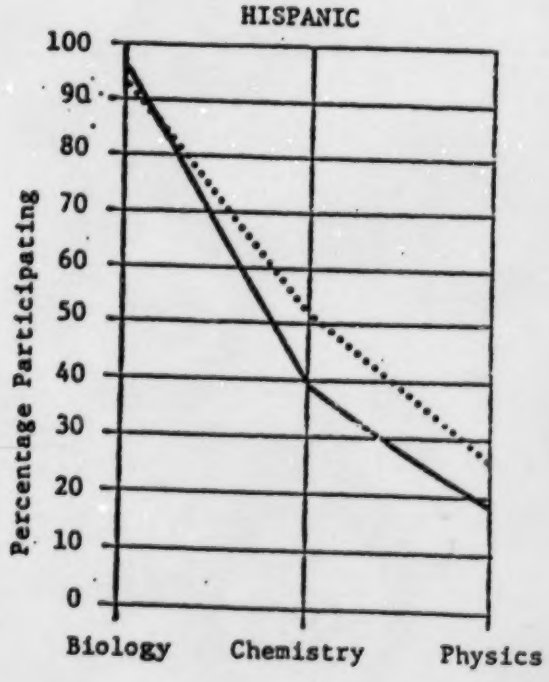


Figure 6. Participation in traditional college preparatory science courses.[1]

1. Remick, H., K. Miller. May, 1978. Participation rates in high school mathematics and science courses. The Physics Teacher. p. 281.

Key: —— females
.... males

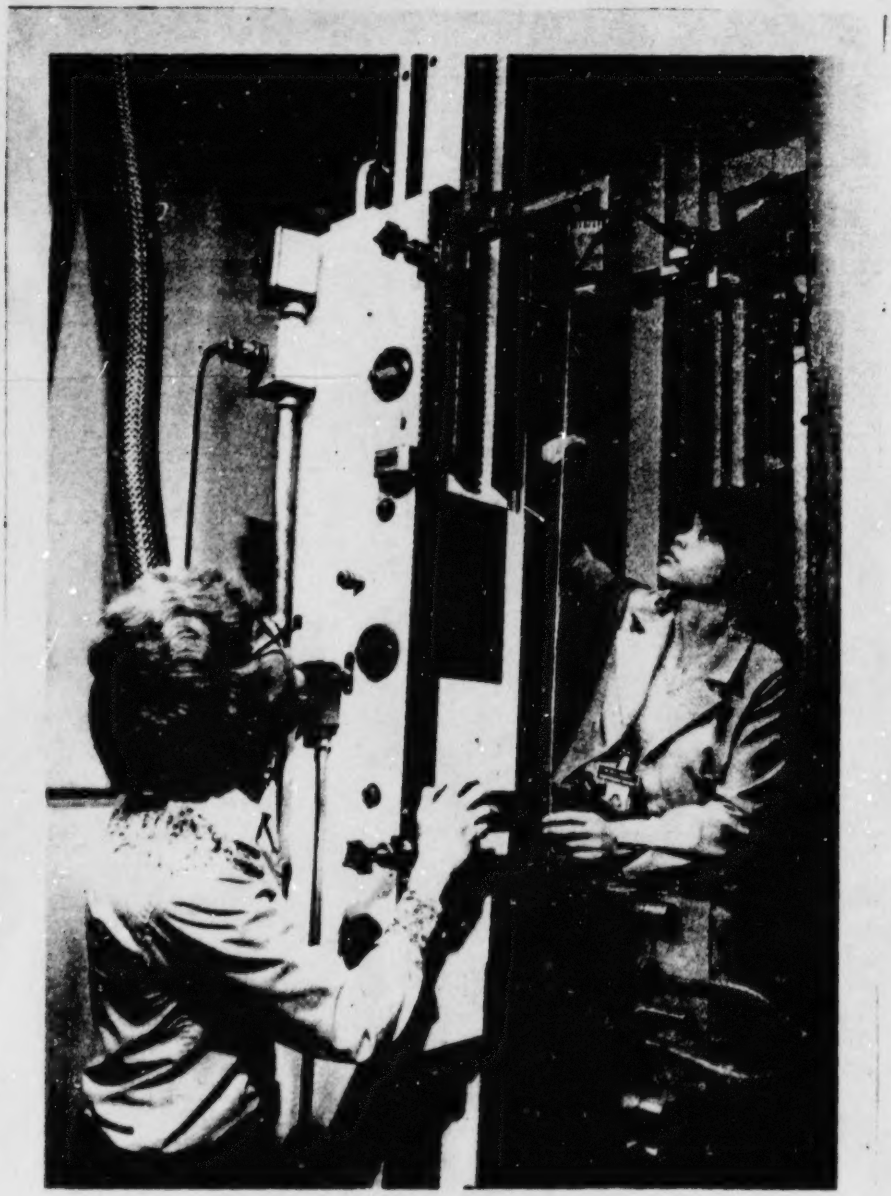


Figure 7 Brenda Barkey and Todd Gilbert worked in the Interim Examination and Maintenance Cell training facility, where equipment is set up and tested before use in the actual IEM cell at the Fast Flux Test Facility.

TABLE 1

CAREER CHOICES OF THIRD GRADE STUDENTS

THIRD GRADE GIRLS - 173 total and 29 occupations listed

Percentage	Occupation
24.3	Teacher
11.0	Nurse
7.5	Veterinarian*, Don't know.
6.4	Work with Animals; Engineer; Entertainer
4.0	Housewife
3.5	Scientists
2.9	Athlete
2.3	Artist
1.7	Physician, farmer, restaurant worker, day-care mother, musician
1.2	Secretary, maid
0.6	Judge, policewoman, president, salespersons, stewardess, storekeeper, beautician, carpenter, clerk, electrician, engraver, Hanford contractor employee

* If veterinarian is grouped with those who want to "work with animals", percentage would be 13.9 making this career choice second.

THIRD GRADE BOYS - 151 total and 24 occupations listed

31.1%	Athlete
13.9	Engineer
11.9	Don't know
8.6	Policeman; scientist
4.6	Physician
3.3	Electrician
2.6	Fireman
2.0	Military Service
1.3	Artist, carpenter, farmer, forest ranger, restuarant worker
0.7	Architect; baker; diamond setter; machinist; paramedic; pilot; railroad man; truck driver; coal miner; Hanford contractor employee.

TABLE 2

CAREER CHOICES OF SIXTH GRADE STUDENTS

SIXTH GRADE GIRLS — 212 Total and 40 occupations listed

Percentage	Occupation
22.2	Don't know
9.4	Veterinarian
9.0	Teacher; nurse
4.2	Scientist; Secretary
3.8	Physician
3.3	Entertainer*
2.8	Stewardess
2.4	Lawyer, policewoman, artist, engineer
1.9	Work with horses (jockey, trainer)
1.4	Housewife, beautician, athlete, journalist, laboratory technician, restaurant worker
0.9	Model, truck driver, advertising, dental hygienist, electrician
0.5	Astronaut, bank teller, librarian, military service, clerk, musician, paramedic, radiation monitor, carpenter, computer specialist, marriage counselor, crafts, diamond cutter, fashion designer, Hanford contractor employee.

SIXTH GRADE BOYS — 198 total and 43 occupations listed

Percentage	Occupations
16.7	Don't know
15.7	Athlete
10.1	Engineer
5.6	Policeman
4.0	Electrician; pilot
3.5	Physician
3.0	Scientist
2.5	Teacher;truck driver; entertainer*
2.0	Business, construction, forest ranger, welder, military service, architect.
1.0	Astronaut, artist, carpenter, laboratory technician, lawyer, pipefitter
0.5	Boat captain, blacksmith, chiropractor, crafts, extension agent, fireman, humane society worker, journalist, mountain man, painter, office worker, optometrist, paramedic, photographer, plumber, restaurant manager, salesperson, scuba diver in oceanography, service station owner, train engineer, veterinarian

*Entertainer grouping includes singer, dancer, comedian, impressionist, actress, disc jockey, and stuntman.

TABLE 3

ATTITUDE TOWARD MATHEMATICS OF THIRD AND SIXTH GRADE STUDENTS

THIRD GRADE	Number	Like Math	Would like Help Sometimes
Girls	190	85%	46%
Boys	197	80%	46%
SIXTH GRADE			
Girls	194	86%	51%
Boys	184	82%	53%

TABLE 4

CAREER CHOICES OF SEVENTH GRADE STUDENTS

SEVENTH GRADE GIRLS — 149 Total - 30 Occupations Listed

Percentage	Occupation
28.9	Don't know
13.4	Teacher
6.0	Veterinarian
5.4	Nurse
4.7	Stewardess; scientist
3.7	Physician; animal trainer
3.4	Lawyer; beautician
2.0	Housewife, engineer, writer, entertainer, salesperson
1.3	Computer programmer, banker, health occupations business, restuarant worker.
0.7	Pilot, fashion designer, electronics, dietitian, laboratory technician, architect, musician, radiation technician, psychologist

SEVENTH GRADE BOYS — 137 Total - 34 Occupations Listed

Percentage	Occupation
24.8	Don't Know
18.2	Athlete
10.9	Engineer
3.6	Scientist; policeman
2.9	Lawyer; veterinarian
2.2	Physician, computer programmer, welder
1.5	Politician, salesperson, teacher, reactor operator, mathematician, carpenter, fire-fighter, mechanic, farmer, pilot, Hanford supervisor
0.7	Dentist, lab technician, construction, draftsman, game warden, architect, electrician, trucker, minister, artist, forester, key punch operator, pipefitter, crane operator.

TABLE 5

CAREER CHOICES OF EIGHTH GRADE STUDENTS

EIGHTH GRADE GIRLS — 169 Total - 33 Occupations Listed

Percentage	Occupation
34.9	Don't Know
10.1	Teacher
6.5	Secretary
4.7	Scientist
3.6	Veterinarians
3.0	Entertainer; beautician
2.4	Engineer, physician, housewife, architect, model
1.8	Lawyer, health occupations, stewardess
1.2	Artist, musician, nurse,lab technician, computer programmer, writer, interior decorator, policeman
0.6	Restaurant worker, salesperson, work with horses, photographer, radiation technician, nuclear reactor operator, electrician, accountant, business manager, dentist, agriculture, teletypist, astronaut.

(Separate fields are grouped under headings of scientist, engineeer, health occupations)

EIGHTH GRADE BOYS — 151 Total - 37 Occupations Listed

Percentage	Occupation
26.5	Don't Know
10.6	Engineer
5.3	Scientist
4.6	Athlete, architect, lawyer, physician
3.3	Veterinarian
2.6	Teacher, welder
2.0	Salesperson, radiation monitor, electrician, writer, policeman, forester.
1.3	Pilot, trucker, mechanic, businessman, dentist, draftsman
0.7	Artist, restaurant worker, musician, photographer, lab technician, computer programmer, crafts, sanitation, chiropractor, pipefitter, worker at Hanford reservation, deep sea diver, electronics, accountant, carpenter, psychologist.

TABLE 6

PLANS OF NINTH GRADERS FOR FUTURE ENROLLMENT IN SCIENCE AND/OR MATH CLASSES

	Total	Math	Science	Both	Neither
Girls	133	28.6	8.3	45.1	18.0
Boys	118	21.2	2.5	55.9	20.3
Difference		+ 7.4%	+ 5.8%	- 10.8%	- 2.3%

Note: One year of math and science between grades 9-12 is required for graduation of all students.

TABLE 7

CAREER CHOICES OF NINTH GRADE STUDENTS

NINTH GRADE GIRLS — 148 Total - 39 Occupations Listed

Percentage	Occupation
25.7	Don't Know
10.8	Secretary
4.1	Computer Programmer*
3.8	Veterinarian, teacher, stewardess, scientist
2.7	Engineer, artist, psychologist, entertainer, accountant
2.0	Nurse, social worker, lab technician, model, health service, physician, welder*
1.4	Housewife, fashion designer, radiation technician, salesperson
0.7	Rancher, musician, seamstress, trucker, sanitation. Court reporter, manager at Hanford Nuclear reservation; restaurant worker, astronaut, switchboard operator, business, pilot, forester, lawyer, writer, architect, beautician.

*Computer Programmer. Some students who listed this occupation were probably responding impulsively to remarks by the speaker. Some of these numbers should be included in the "don't know" category.

NINTH GRADE BOYS — 142 Total - 42 Occupations Listed

Percentage	Occupation
20.4	Don't Know
9.2	Welder*
7.0	Scientist
5.6	Engineer
4.2	Electrician; entertainer
3.5	Lawyer
2.8	Physician; forester
2.1	Pilot, dentist, business manager at Hanford Nuclear, musician, computer programmer, game warden, mechanic, architect
1.4	Artist, teacher, trucker, pipefitter, athlete, electronics, photographer
0.7	Gunsmith, woodcarver, veterinarian, reactor operator, radiation protection; agriculture; military, carpenter, advertising, draftsman, lab technician, restaurant worker, astronaut, accountant, salesperson, writer.

* Welder. Some students who listed this occupation were probably responding impulsively to remarks made about salaries of welders. Some of these numbers should be included in the "Don't know" category.

Figure 8. Science Inquiry student Karen Lacy, left, showed a rat's lungs and heart to Battelle veterinary pathologist Gary Zwicker. She discovered that the organs were reversed left to right from normal. Dr. Zwicker also serves in the Mentor Program.

PART TWO

DESCRIPTION OF THE MENTOR PROGRAM AND GUIDELINES FOR ADOPTER.

MENTOR PROGRAM DESCRIPTION AND RESULTS

The Mentor Program is a one-to-one relationship between a student and a professional or technical person working in the student's field of interest. It places students interested in science, health, or engineering occupations in contact, on an individual basis, with adults working in fields about which students would like to know more. It provides the high school student with first-hand, current information and an opportunity to ask personally relevant questions of a professional. Such dialogue cannot be attained in the classroom. When possible, high school women are matched with working women so that the latter may serve as role models. The mentor is not a tutor or a counselor, but a friend. A maximum of two meetings a month for two or three months is recommended. In some cases, where the career choice is definite, it is hoped that the friendship established will continue. The student will feel free at future times to ask the mentor for advice. One meeting may be sufficient in cases where students feel they know enough about that career to prepare for it or enough to lead them to seek mentors in other fields in which they are also interested. Sometimes students narrow down their choices after meeting with a mentor. For example, one young woman met with a mentor, a microbiologist, in industrial research. She then notified the coordinator that she wished to meet a medical technologist. She was able to proceed from a broad interest in microbiology to the special field of medical technology. That kind of information is helpful to seniors but the program is most beneficial to ninth, tenth, and eleventh grade students. They see the value of high school math and science courses in the attainment of their goals. Doors are open to them. They perceive school as a means to an end, and have a new incentive to study. Samples of comments are found on page . For reasons given in the Preface, males were included in the Mentor Program. The total of 82 students involved includes 46 females and 36 males. Twenty-five students were in the ninth grade; the others were in grades ten through twelve. Feedback has been received in 49% of the cases and it is all positive and enthusiastic. Some mentors reported they had not been able to set appointments with students because of the end of the school year activities. In spite of the late timing, the results of this simple, inexpensive program have been rewarding.

IMPLEMENTATION OF THE MENTOR PROGRAM IN RICHLAND

Mentors in engineering, chemistry, and the physical sciences were obtained through the cooperation of the Tri-City Technical Council which is composed of sixteen scientific societies representing over 1700 professional and technical people. The Council endorsed the program and sent letters to their membership asking for cooperation in this program and/or in a program of small group discussions suggested by James Harbour. Mr. Harbour is the teacher of the Science Inquiry Class. The latter will be initiated in the 1978-79 school year. One hundred and three positive responses were received. Twenty-seven of these listed small group discussion only, seventy-six listed mentor only or mentor, plus small group

discussion leader. Mentors in life sciences, health services, and atmospheric sciences were obtained through the cooperation of department chairpersons of Battelle Northwest, who placed the call for mentors in their weekly newsletters and followed up by personal requests. Some specialists were contacted from a list supplied by the Kadlec Hospital Administrator, from an industrial employee roster of scientific personnel, from personal requests of three physicians, one dentist, five veterinarians, occupational and physical therapists, and a welding instructor at Columbia Basin Community College. A woman engineer was mentor to several students. A newly-retired physician met with a group of five students. His son, a medical student, was also present. More meetings are planned for the Fall. This physician also met separately with a senior girl, who, he reported is "well on the way toward a career decision." A total of eighty-two students were assigned to 74 mentors in the Spring of 1978. Forty of these were taken from the Tri-City Technical Council respondents: thirty-four were taken from the other sources listed. Unassigned mentors were informed that they would be called next year. If the program had begun earlier in the school year, all mentors would have been assigned.

Names of students interested in participating in the Mentor Program were obtained by describing the program to students in grades nine through twelve, after presentations of science career awareness programs. Letters to parents of interested students were sent home to inform them of the Mentor Program and to have them sign a permission slip.

Students and mentors each supplied names, addresses, telephone numbers, and career interests. They were matched according to career interest and when possible, by sex. It was suggested they contact one another to determine their first meeting date and place. A feedback slip was included.

QUOTES FROM PARTICIPANTS IN THE MENTOR PROGRAM

"The technical community has not had a good inter-tie with the schools, this should do it." Mr. M. Lardy, Secretary, Tri-City Technical Council.

Student Kathy Wilson, grade 10; interest: engineering: "I am really happy with the Mentor Program and plan to continue it. My mentor, Wanda Munn, is a super person and real helpful to me. I thank you for the opportunity to be involved with a great program and super people."

Student Cindy Rau, grade 10; interest: computer science and astronomy: "I still might go into another field. I don't know. From this meeting, I know what types of classes I should take. Thank you."

Student Debbie Morford, grade 12; interest: medicine: "I really appreciated having the chance to talk to someone in the medical field (other than the research field). I never had anybody to talk to before, though. Hopefully, I will be able to talk to Dr. Cahn a few more times while I'm going to college. He was very interesting. Being retired, he's been through the whole medical doctor cycle, so I know he speaks from experience. I only regret that the program didn't start earlier in the year. It was sort of a rush scheduling and meeting during school's testing, etc."

Student Toni M. Stacy, grade 12; interest: science, engineering (uncertain): "The Mentor Program came too late to be of real help to me. If it would have been in effect when I was a sophomore or freshman maybe I could have got some good out of the program. I am glad to see such a good and helpful program being developed and the young people having this door opened to them. This Program should begin in junior high school. This helps them choose a field of their choice and take classes that would be beneficial."

Mentor William H. Keatts, DVM: "Nancy had a second meeting with us May 20. At that time, she observed us in action around the veterinary hospital. I found that Nancy was very unaware of the scope of veterinary medicine. From what she indicated to me, I would hope that her advisors stress the importance of improving her grades and broaden her scientific background." (Student is Nancy Phillips, ninth grade).

Parent: "Two of our girls were in the program, Barbara in 12th grade and Nancy in 9th grade. Both were very excited about it. Barbara even had dinner at the mentor's home. The Program helped Nancy more than Barbara because Barbara is older and has always known, generally, what she wanted to do. Nancy really got excited about her visits to the veterinary hospital. Dr. Keatts let her stay with him all the time. We had been talking to her about studying harder. She under-achieves for her capabilities. This has been an incentive to her. She had sort of a romantic idea of the job, now she knows how specialized it is and how important good grades are if she wants to be accepted. She's planning on taking more science and math now because of this." (Students are Barbara and Nancy Phillips)

Mentor R. D. Campbell: "Courses recommended in math and art to the maximum extent available. A brief overview, with sample work was provided and discussed for civil, architectural, schedular, graphic art, photogrammetric and cartographic graphics." (Student is Marla Trevino, tenth grade, whose interest is graphic engineering)

Mentor Kathy Rhoads: "I believe so - her response seemed favorable. I was able to make some specific recommendations regarding courses and general program orientation which may help her in getting a better start." (Student is Cheryl McMillan, grade twelve, whose interest is microbiology)

Mentor Barbara Elsensohn: "She seemed interested and we talked about things she did not know about a career in nursing. I think this is a most beneficial program and benefits not only the student but the mentor as well. I would have enjoyed doing this earlier in the school year to be more involved with the preparation for college." (Student is Kim Lujan, 12th grade)

Mentor Robert C. Lawrence: "Student was given a tour of the Battelle fracture-fatigue mechanics lab and was introduced to some mechanical engineering problems. He was impressed with this and very receptive to the needs and requirements associated for continued education. Additional meetings are scheduled for additional talks and familiarization of equipment, facilities and educational needs. Mr. Hall was very open with his conversation and seems to be reassessing his goals and how to obtain them after this meeting. It was suggested he see a counselor about some kind of mathematics course during the summer so he could more confidently enter into mathematics at Columbia High. Perhaps you could follow up on this." (Student is Sydney Hall, 9th grade, whose interest is engineering-carpentry)

Parent: As recommended by mentor, parent was contacted, and said: "This man really inspired Syd. He is reassessing his values. He is going to take math in summer school. He is very enthused; looks at school differently, with a view of where it could take him." Parent further stated that she and her husband had many long talks about math, but talking to a man who uses it and who does interesting things and is very successful, makes the difference. She said this is a "fabulous program and would like to see it continue."

Secondary School Principal Minutes: "Mel Schauer introduced Jackie Cushing to explain the Mentor Program. Professional people in science and engineering volunteer as resource persons to assist a student who is career-oriented toward their same profession. The results have been excellent. Although federal funding is not available for next year, it is the consensus of the principals to have the District fund the Program for next year. Mrs. Cushing would like to expand the Program to include skilled and non-skilled fields." (June 14, 1978)

SUGGESTIONS FOR IMPLEMENTATION OF THE MENTOR PROGRAM

1. Decide on the scope of the Mentor Program. It could be expanded to include other stereotyped vocations such as law, aviation, machinist, mechanics, plumbing, welding, law enforcement, religious ministry, and others.

2. Obtain a list of local organizations from the Chamber of Commerce. Inquire about others not listed. If there are few appropriate organizations, it will be necessary to contact the industries for help. The department managers of cooperating industries can be very helpful in supplying names of volunteers for the Mentor Program. The hospital, and health service laboratories are a good source of talent.

3. Obtain a list of students who are interested in joining the Mentor Program. You will need names, addresses, telephone numbers, grade levels, and fields of interest. Names may be accumulated after career awareness programs are presented in classes. Another means may be to publicize the program in the school bulletin. Home-room teachers might be asked to make the announcement.

4. Send a letter home to parents or guardians of the student, describing the program and include a participation permission slip. If the letter is sent home with the student, it may have to be followed up by a telephone call because students tend to forget to return the slips.

5. Match student's interest with the professional's occupation or topic of interest listed by the mentor. Many times they are proficient in more than one field. If possible, try to match females with females, so that the high school student will have a role model.

6. Ditto a letter to students, leaving blanks to be filled in by hand to identify the mentor by name, address, telephone and career interests. Inform the student that a similar letter is being sent to the mentor. Mentor and student are requested to make efforts to contact each other so that meetings may begin as soon as possible. Request some feedback before a certain date. Provide a form for this. Ask the number of meetings held and if more are planned; what did the student hope to gain from the Mentor Program; if the program is helping in any way; If, yes, how; if no, why it is not helping, and ask they provide any comments and suggestions.

7. Ditto a letter to mentors, leaving blanks to be filled in by hand to identify the student by name, address and telephone number, plus grade, school, and present career interest. The message to the mentor is the same as that to the student. Feedback questions are: Number of meetings you have had? Do you plan to have more meetings with this student? In your opinion were these talks beneficial to the student in providing personally relevant information as to career interest, course preparation? Comments and suggestions? May you be called upon again to serve as mentor for another student?

8. Mail the letter to student and mentor the same day.

PART THREE

AUDIO-VISUAL PRODUCT

A twenty-two minute slide/tape presentation, titled "Women Inquire Into Science and Engineering (WISE)" was assembled. It had a two-fold purpose;

1. To apprise students of the opportunities for them in the Inquiry Into Science and Engineering Class and encourage them to take the prerequisite math and science courses.

2. To present scientific career information and advice by female role models.

Suggested audience is the grades six to twelve group. This was shown in grades nine through twelve and to one sixth grade class. The response of teacher and students in the sixth grade class was excellent.

DESCRIPTION OF PRODUCT

Five-minute, unrehearsed talks by four women are illustrated by 35mm color slides. The talks are separated briefly by music.

In the first segment, elementary, junior high, and high school girls are shown at work in diverse science class activities, in drafting and shop classes, and in the Inquiry Into Science and Engineering Class. These young women are also shown at work in their on-the-job experiences. The narrator talks about preparation for this class and for science careers generally.

In the second segment, a physicist gives a self-profile and describes the personal qualifications of a scientist. She stresses curiosity, enthusiasm, being able to work on a team, communicative skills-verbal and written, and orderliness in thinking. Her talk is illustrated with stereotyped cartoons, atmospheric studies, and other scientists at work.

In the third segment, a chemical engineer discusses the degree of difficulty in preparation for such a career, what an engineer actually does, and the inherent reqards. Her talk is illustrated with slides of students at work and with engineers on-the-job. Many of these engineers are women.

In the final segment, a physician describes the factors that influenced her career choice, her training and practice with its difficulties and rewards. She concludes with some advice to high school students. Her talk is illustrated with slides of herself at work and of other women working in a scientific or hospital setting.

PRESENTATION TECHNIQUES

The presentation was introduced in classrooms with a distribution of a three-page paper titled, "Why Take More Math?." The first page emphasizes the importance of strong college preparatory programs in high school.

The other two pages list college majors requiring or recommending math or science courses beyond those meeting the university's recommended breadth requirements (intermediate algebra). "Though these courses can be made up at the college level, this remediation frequently causes a delay . . . serves as a perceived barrier to choosing these fields of study." A note on the paper states, "It is better to have taken math and received a "c" than to not have taken math at all."[1] Students were given a few minutes to look over the fields of study with the usual four years of math/science requirements or recommendations. Many were surprised to see fields they were interested in, such as fisheries and dental hygiene requiring four years of high school college preparatory mathematics. Seven hundred and sixty students and twenty-one teachers in grades 9 through 12 saw the presentation and made comments or suggestions for improvement during its development. In addition, it was shown to one sixth grade class and teacher where it was enthusiastically received.

Students were informed that many occupations which do not require college preparation do demand competence in mathematics. National and local figures show that fewer women than men enroll in more than the minimal required mathematics courses. Sometimes charts or graphs of enrollment figures were shown for emphasis. It was explained that the presentation was directed to girls, but that much of the information concerning the educational requirements and the work itself was applicable to boys.

The physician concluded her talk with the recommendation to find an advisor, someone working in the field which the student hopes to pursue. This was an opportune time to announce the Mentor Program and to obtain names, addresses, telephone numbers, grade level, and field of interest from students.

To preclude any backlash, a male engineer was sometimes invited to accompany the presentation. This had the effect of showing male support for the emphasis on women.

It is advisable to attach a room speaker to the cassette for sound amplification, and if the presentation is being made in grades 6 through 9, the vocabulary list which accompanies the slide/tape might want to be reviewed by the classes prior to the presentation itself.

PRODUCING AN AUDIO-VISUAL PROGRAM

It is a distinct advantage to have a local production. Recognition of teachers, students, and buildings heightens interest and relevancy. It also helps to emphasize certain classes in the adopter's own school system.

In the WISE production, many slides were donated by companies, the hospital, and the Society of Women Engineers. Others were taken by a high school photography student. The sound was first taped on a cassette. Sound quality was poor, so the extemporaneous talks were copied on scripts. They were then read by the original speakers while being taped on a reel, gratis KONA Radio Broadcasting Station.

[1]Anon. September 1977. Why Take More Math? Office of Affirmative Action, Informative Brochure, University of Washington, DW-08, Seattle, Washington 98195

On an early tape, audible markers were added by a young musician. On the final tape the audible markers were produced by a technician at Battelle Northwest Laboratories. Inaudible markers were added at the Hanford Science Center where the sound was transferred to a cassette, all gratis.

The WISE production was made with the purpose of in-house use and not necessarily for replication of this project. It will however, be made available to those who request it from the Richland School District.

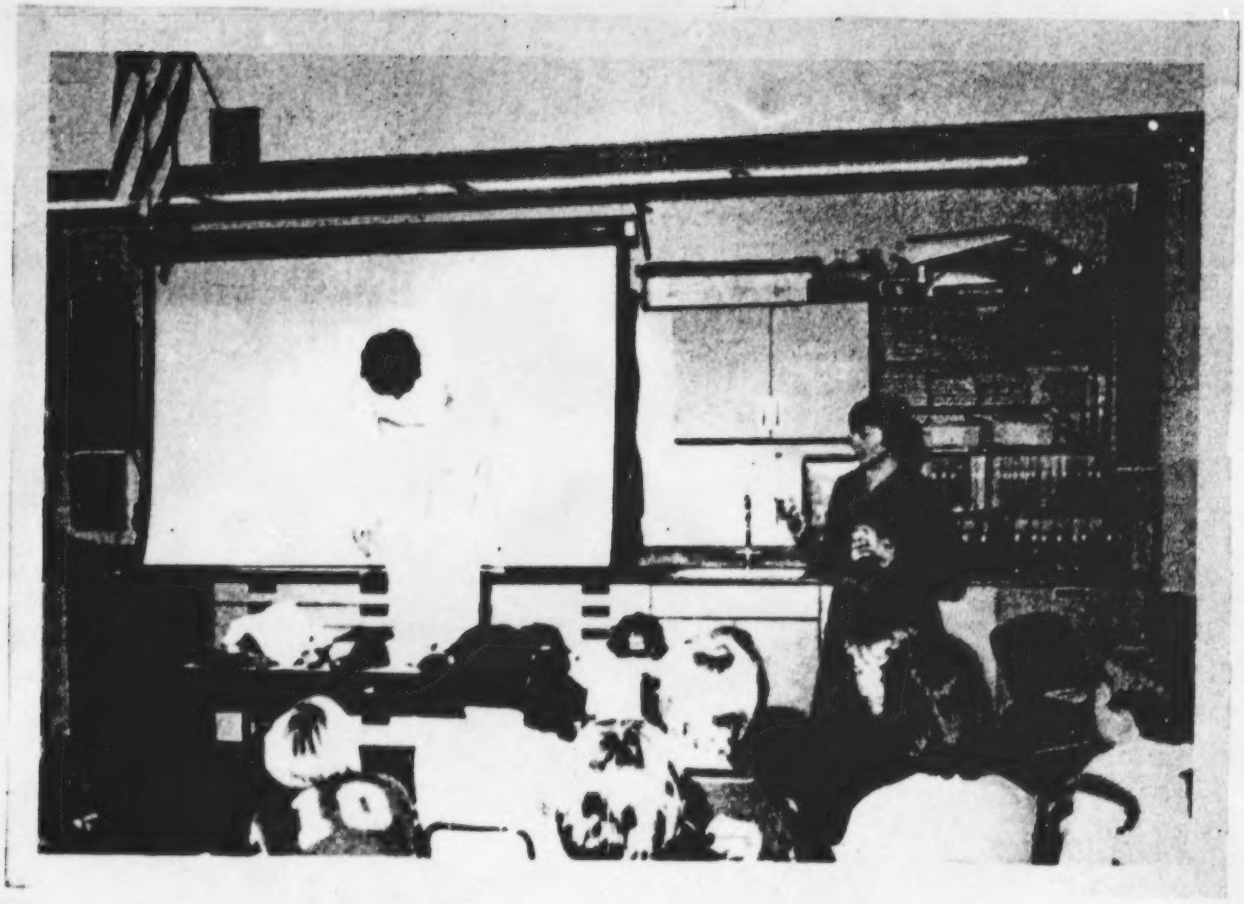


Figure 9. Radiation Technician Shirley Hankins, does a protective clothing demonstration, as Elizabeth Bowers Design Engineer, describes the clothing and why it is worn. In all. 21 presentations on "Non-traditional Occupations for Women in the Nuclear Industry" were made in 13 Richland schools.

PART FOUR

ROLE MODELS IN PERSON

CAREER AWARENESS

For the majority of students, this was the first time they had spoken to, heard, or seen a woman engineer, a woman physicist, a woman physician, or a woman pharmacist. The Project Coordinator scheduled and attended each of these programs because they provided the opportunity to talk about the relevance of math and science electives, of the existance of the Inquiry Into Science and Engineering Class and its prerequisites, and in grades 9-12, of the Mentor Program.

ASSEMBLY PROGRAMS

Two women, an engineer and a radiation technician from United Nuclear Industries, had assembled a slide-talk show on "Women in Non-Traditional Occupations in the Nuclear Industry." They adjusted it to grade levels by supplementing it with cartoon-type films concerning conservation, and by adapting vocabulary. Their program included a clothing and equipment demonstration. Students were permitted to try on the clothing and handle the equipment. There was a question and answer period following the presentation.

This program was presented to every third and sixth grade assembly in the District's seven elementary schools and also, in the parochial school. At the third grade level, career slides were omitted, but the fact that a woman engineer and a woman radiation technician were presenting the program, was in itself a method of eliminating any sex-role stereotyping of these occupations. (Tables 1 and 2)

The program was also presented to 7th, 8th, and 9th grade assemblies as well as two junior high schools. It is important that junior high school students be prepared for a career awareness assembly, particularly if the emphasis is on non-traditional occupations for women. Just as in the WISE presentation, the boys must be included somehow. These women sometimes used boys in the clothing demonstration. The seriousness of the subject matter is enhanced if the principal rather than a student introduces the program. The alienation of the boys deprives the girls of peer supports.

At the District's two high schools, business departments scheduled an assembly and other students were invited to attend through announcements in school bulletins. Some geometry classes also attended. The Coordinator was pleased with this opportunity to reach students who might not be enrolled in other math or science classes. The program was presented to a total of 3,235 students and 144 teachers.

CLASS ROOM PROGRAMS

The Society of Women Engineers has a 35mm colorslide/cassette tape program illustrating career opportunities in engineering for young women. The 25 minute presentation is entitled, "It's Just a New Day!" and is directed to girls of high school age, their parents, and counselors. This was shown to all the chemistry students and advanced biology students in Columbia High School. Women engineers always accompanied this to lead a discussion or answer questions. For information about it, contact: Stephanie Templeton, Danna 140, Washington State University, Pullman, Washington 99164.

As mentioned under Audio-Visual Programs, male engineers sometimes came to classes where the WISE presentation was being shown.

EVENING PROGRAMS

Because parents exert a major influence in career choices of their youngsters, a Science Career Awareness Evening for parents and young women in grades six through twelve was held. Program participants were women in the following occupations: pharmacy, pediatrics, chemical engineering, field engineering, physics, extended nursing, and non-traditional occupations in the nuclear industry. A male engineer whose daughter is an engineering student at M.I.T., also participated. A high school counselor answered questions concerning colleges and scholarships. The Project Coordinator acted as Chairperson. Literature distributed included booklets entitled "Space for Women", "Perspectives on Careers in Science", "Scholarship Information", and a copy of the foreward from NIE papers in Education and Work, No. 8. The Smithsonian Astrophysical Observatory furnished 124 "Space for Women" booklets at no charge.

To publicize this program, brochures were printed at the high school and circulated to families through girls in grades 6 through 12. Notices were put in school newsletters, and the local newspaper, radio and television stations. All announcements were made, without charge, as community service activities.

A program such as this could be one of a series as there are many other occupations for women of which parents and students are not aware.

GUIDELINES FOR THE ADOPTER

Contact the public relations office or speakers' bureau of local industries . It is possible that they might have an adaptable program for use in schools.

Contact local offices of Equal Opportunity. These offices can supply names of women working in scientific positions of a professional or technical scale.

Contact organizations such as the Society of Women Engineers. In order to locate the Chapter nearest you, write to;

Society of Women Engineers
United Engineering Center, Room 305
345 East 47th St.
New York, NY 10017 Telephone: (212) 644-7855

Consult listings of audio-visual products. Armed with this, role models and a possible demonstration of some scientific activity, you can assemble a good program.

COMMENTS MADE AFTER PROGRAMS

Career Awareness Evening Program:

Student comments: "Mentor Program sounds very valuable."
"I think girls or guys in lower grades should become aware of the Advanced Placement classes and career goals." (12th grader)
"Can't recall specifics except that I'll need more math and science courses."
"I didn't know biology was needed for jobs such as pharmacy."

Parent: "Good presentations - informative and well-presented. Stress on subjects needed in fields was well covered. Would like to see women in fields not in leadership roles. This is nice but we are not all in these positions. Are young people given opportunities to learn communications skills?"

CLASSROOM PROGRAMS

After viewing the slide-tape show, "It's Just a New Day!", students were asked what questions they had about working in a technical occupation. These were some of the questions: What does an engineer do? What are 'fields' of engineering? What kind of grades do you need to become an engineer? What does it pay?

ASSEMBLY PROGRAMS

Third Grade

Question: "What conservation project are you going to do in your own home?" Many answered "I am going to turn off the lights when I leave the room."

"What did you like or dislike about the movie?" Several answered, "It was funny."

"What did you like best about the program?" Many answered, "everything", and others replied "when they put on the clothes", or "when I got to try the things."

Sixth Grade

Question: "Name something you may have learned from the career slides?"

Answers:

Girl: "How women are getting new jobs and how important they are."

Boy: "That girls can do most the things men can do. Also, that sometimes they train on the job."

Girls: "That women can do just as good a job in any field as men."

Boy: "Women can be engineers."

Boy: "There are lots of ladies doing men jobs."

Junior High Schools

Most students in the two schools circled "O.K." or "good" when asked to describe the program. Some said it was "really interesting" or "dull". The part of the program they liked best was the clothing demonstration, although a few preferred the short film or career slides.

The influence of the program, however, is partly reflected in the number of welders, computer programmers, radiation technicians, and radiation monitors listed as career choices in Tables 4, 5, and 7. Although such impulsive decisions are not valid, they do indicate ar awareness of opportunities. These hasty choices should probably be included in the "don't know" category.

PART FIVE

CONCLUSIONS AND DISSEMINATION

The short-range goal of increased female enrollment in the Inquiry Into Science and Engineering Class was met as was seen through pre-registration enrollment data. The long-range goals of implementing methods to systematically draw women into that class and into science and engineering professions give positive indications but only future enrollments in mathematics and science courses will attest to their effectiveness.

Students in grades 6, 7, and 8 are prime targets for career awareness programs with the corresponding emphasis on course requirements. They are about to make decisions which have a bearing upon their future educational choices and consequently, their career options. Most of them are in the "don't know category" of career aspirations. A broad background in science and mathematics and communicative skills will open doors to them.

Students in grades 9, 10, and 11 also need career awareness programs. In addition they are mature enough to benefit from individual attention as provided in the Mentor Program.

Students in 12th grade obviously cannot be helped by admonishments to take more high school science and mathematics. They can, however, be encouraged to take remedial work, if necessary, to achieve a goal. They are aided by career awareness programs. The friendships made in the Mentor Program have the potential of assisting them throughout their academic lives.

Each of the limiting factors identified from the professional/technical female respondents to a questionnaire, was addressed in this project. Familiarity with tools and the qualities of communicative skills, self-confidence, and assertiveness are especially developed through classes such as the Inquiry Into Science and Engineering Class. Some of the latter aspects might also be enhanced through the Mentor Program.

DISSEMINATION

This Project has been publicized in the local newspaper, the TRI-CITY HERALD, with a full page exposure. Pictures and articles have also been published by the HANFORD NEWS, WESTINGHOUSE NEWS, the BREMERTON SUN, and WEAL NEWSFLASH carried an article pertaining to it. The Society of Women Engineers gave publicity to the Project at their National meeting in Atlanta, Georgia in July 1978.

Two Richland School District teachers who initiated and conducted the Inquiry Into Science and Engineering Class, received awards in April, 1978 from the National Science Teachers Association. Response to inquiries about their class which may result from the publicity will carry information about this project as well.

The Tri-City Technical Council plans to contact principals of the secondary schools in neighboring cities of Kennewick and Pasco to encourage them to adopt the Mentor Program. Kennewick is beginning to place students in science work-learn situations. A counselor at Kamiakin High School in Kennewick has requested that the Project Coordinator meet with him to discuss the programs. The WISE slide/tape presentation and the Mentor Program would easily be transportable. Many of the professional/technical personnel of the Hanford Project reside in Kennewick. The schools have the same access to science talent.

The Secondary School Principals of the Richland School District have recommended to the Administration that the Mentor Program be funded for the next school year. A coordinator of the Mentor Program could assist Kennewick and Pasco school personnel to implement it.

News of the Adopters Manual could be carried in Your Public Schools, a newspaper circulated by the Superintendent of Public Instruction, Olympia, Washington.

The Manager of the Gifted Project in the Pacific Science Center, Seattle, would like a report of the Project.

PART SIX

RESOURCE LIST

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